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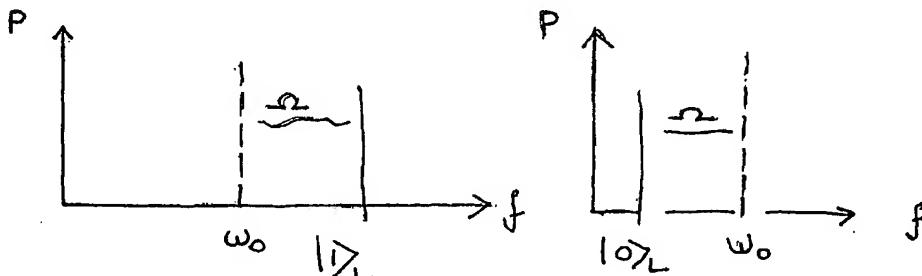
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(54) Title: COMPONENTS FOR OPTICAL QUBITS IN THE RADIO FREQUENCY BASIS



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(57) Abstract: The invention is in the field of optical quantum information processing. This invention concerns the manipulation of single photon qubits in frequency modes, and in particular a frequency beamsplitter and a frequency half-wave plate for use in the frequency basis. The frequency beamsplitter comprises: An asymmetric two-path interferometer, reversible down to the quantum limit. A first partially transmitting mirror to split photons into first and second paths. A time delay element to introduce a differential time delay into the second path. And a second partially transmitting mirror to mix the two paths again to form two outputs. The half-wave plate utilizes two of the beam splitters.